

County OWEN
T 9 N R 3 W
Sec 6
Other Survey

Quarry or Pit.....Core ^X.....Dim.....Other.....
 Name ..Survey Drill Hole 249 - Robert R. Knapp Farm
 Former Names

 Operator
 Former Operators

COAL AND INDUSTRIAL MINERALS SECTION
INDIANA GEOLOGICAL SURVEY
DEPARTMENT OF NATURAL RESOURCES
611 NORTH WALNUT GROVE
BLOOMINGTON, INDIANA 47401

MEMORANDUM REPORTS BY:

Name

Date _____

	Donald D. Carr	August, 1974
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REMARKS

Survey Drill Hole 249
 Farm: Robert R. Knapp NW¼ SE¼ NW¼
 Location: sec. 6, T. 9N., R. 3W. 230' NL, 630' WL
 Owen County
 Locality: About 3 miles south of Spencer
 Driller: Clarence Haskins; Ass't Driller, John Helms
 Drilling began: June 17, 1974
 Drilling completed: July 23, 1974
 Surface elevation: 635 feet (Paulin)
 Total depth: 202 feet
 Core requested by: Richard Leininger and Donald Carr
 Core described: Donald Carr, August 1974
 Comments: Rockbit 0-45'; core 45-202
 Core examined wet with binocular microscope
 Sample numbers refer to samples prepared for chemical analysis

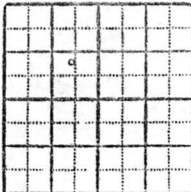
Unit	Description	Depth		Sample
1	Illinoian glacial till	0.0	40.0	
	Ste. Genevieve Limestone (119.2')			
	Levias Member			
2	Limestone, light gray, skeletal, med - cs. - grained.	40.0	45.0	
3	Limestone, lt. brn. gray with flecks of reddish brown, skeletal, med.- cs.-grained, partly oolitic, some inclined beds.	45.0	47.4	DC74-0014
4.1	Limestone, yl-brn, with streaks and flecks of brown, pelletal with pods and thin beds of cs-gm skeletal, silty throughout but very silty near top and bottom of unit.	47.4	49.7	DC74-0015-1
4.2	Limestone, yl-brn, with streaks and flecks of brown, pelletal with pods and thin beds of cs-gm skeletal, silty throughout but very silty near top and bottom of unit.	49.7	51.6	DC74-0015-2
5	Limestone, mottled tan and white, scattered flecks of gray, micritic, slightly silty, siliceous in part.	51.6	53.2	DC74-0016
6.1	Limestone, yellowish brown, with streaks and flecks of gray, micritic, silty and argillaceous, horizontal laminations.	53.2	55.6	DC74-0017-1
6.2	Limestone, yellowish brown, with streaks and flecks of gray, micritic, silty and argillaceous, horizontal laminations.	55.6	59.6	DC74-0017-2
	0.5' core missing in Run #1, 45'-60'			
7	Limestone, as unit 6, thin beds of chert up to 15 mm thick scattered.	59.6	64.0	DC74-0018
8.1	Limestone, tan, micritic, slightly silty, interbedded with limestone as unit 6.	64.0	66.0	DC74-0019-1
8.2	Limestone, tan, micritic, slightly silty, interbedded with limestone as unit 6.	66.0	68.4	DC74-0019-2

9.1	Limestone, gry-brn, micritic, with scattered nodules and thin siliceous beds, yl and wh, silty in part.	68.4	71.0	DC74-0020-1
9.2	Limestone, gry-brn, micritic, with scattered nodules and thin siliceous beds, yl and wh, silty in part.	71.0	74.0	DC74-0020-2
10.1	Limestone, gry brn, grading to dk. gray brn near base of unit, several yl-grn argillaceous beds.	74.0	76.8	DC74-0021-1
10.1	Limestone, gry brn, grading to dk. gray brn near base of unit, several yl-grn argillaceous beds.	76.8	80.0	DC74-0021-2
11.1	Limestone, dk, gry-brn, with scattered thin argillaceous beds, dk gry, wh chert nodule at 80.5'.	80.0	82.0	DC74-0022-1
11.1	Limestone, dk, gry-brn, with scattered thin argillaceous beds, dk gry, wh chert nodule at 80.5'.	82.0	84.6	DC74-0022-2
12	Limestone as unit 11, argillaceous beds increases toward base.	84.6	88.0	DC74-0023
13.1	Limestone, brn-gry, micritic, scattered flecks of clear spar, fine v. thin argill. and silty beds, some burrow structure.	88.0	91.0	DC74-0024-1
13.1	Limestone, brn-gry, micritic, scattered flecks of clear spar, fine v. thin argill. and silty beds, some burrow structure.	91.0	93.6	DC74-0024-2
14.1	Limestone, dk. bin. gry, micritic, few carbonaceous laminae near base of unit.	93.6	94.5	DC74-0025-1
14.1	Limestone, dk. bin. gry, micritic, few carbonaceous laminae near base of unit.	94.5	96.5	DC74-0025-2
	Spar Mountain Member			
15	Argillaceous limestone, bl-grn, detrital grades to calcareous claystone at base.	96.5	97.5	DC74-0026
16	Shale, dk. gry, calcareous, fissile.	97.5	98.5	DC74-0027
	98.5-100.0 missing, run 3			
17	Limestone, dk gry, micritic, laminated, and shale, gry-yl, calcareous, at base of unit.	100.0	100.4	DC74-0028
18	Limestone, tan interbedded with lt. yl-brn, micritic grades to detrital at base, contorted bedding, algal structures, clay and silt increases in lower part of unit.	100.4	104.5	DC74-0029
	Fredonia Member			
19	Limestone, brn-gry, pellet interbedded with thin beds of micritic.	104.5	106.5	DC74-0030
20.1	Limestone, lt gry, oolitic and skeletal fin. grained, some inclined beds.	106.5	109.5	DC74-0031-1
20.2	Limestone, lt gry, oolitic and skeletal fin. grained, some inclined beds.	109.5	112.0	DC74-0031-2
21	Argillaceous limestone, brn-yl, detrital.	112.0	113.0	DC74-0032

22	Silty dolomite, brn-gry, calcareous in part, numerous small veins filled with sparry calcite.	113.0	114.5	DC74-0033
23	Limestone, lt. yl gray, detrital, argillaceous.	114.5	115.4	DC74-0034
24	Dolomite, brn-gry, silty, hard.	115.4	116.0	DC74-0035
25	Limestone, lt. yl gry, argill and silty, micritic-detrital, porous, scattered fn.-grn. quartz.	116.0	120.1	DC74-0036
26.1	Limestone, v. lt. gry., as unit 26., scattered blebs and laminae of sparry calcite.	120.1	122.6	DC74-0037-1
26.2	Limestone, v. lt. gry., as unit 26., scattered blebs and laminae of sparry calcite.	122.6	126.0	DC74-0037-2
27	Limestone, as unit 26, more argillaceous, sli. dolomitic	126.0	128.3	DC74-0038
28	Limestone, brn-gry, skeletal-micritic, micritic in upper part of unit, fn.-med. grained, hard.	128.3	130.5	DC74-0039
29.1	Limestone, lt gry, skeletal, med.-grained.	130.5	134.3	DC74-0040-1
29.2	Limestone, lt gry, skeletal, med.-grained.	134.3	137.6	DC74-0040-2
30	Limestone, gry, skeletal, med. - v. cs.-grained.	137.6	140.0	DC74-0041
31	Limestone, lt. yl-brn, micritic-skeletal grading to micritic near base, argillaceous content increases toward base.	140.0	142.7	DC74-0042
32	Argillaceous limestone, yl-brn, micritic, v. porous.	142.7	144.1	DC74-0043
33	Silty dolomite, yl-brn, calcareous in part, porous.	144.1	147.3	DC74-0044
34	Limestone, yl-gry, micritic, argillaceous, interbedded with argillaceous limestone as unit 33, few small vugs and vuggy zones filled with calcite and trace fluorite; few siliceous blebs in lower 0.5'.	147.3	150.4	DC74-0045
35	Limestone, yl-brn, micritic (60%), and chert, light gray and gray, mottled (40%).	150.4	150.6	DC74-0046
36.1	Limestone, brn gry, micritic-pellet, increasingly argillaceous in lower part of unit, scattered oolitic and detrital beds.	150.6	152.7	DC74-0047-1
36.2	Limestone, brn gry, micritic-pellet, increasingly argillaceous in lower part of unit, scattered oolitic and detrital beds.	152.7	156.6	DC74-0047-2
37	Silty dolomite, yl-brn, porous, several calcite filled vugs.	156.6	159.2	DC74-0048
	St. Louis Limestone (42.8' cored)			
38.1	Silty limestone, yl-brn, pellet-micritic, dolomitic in part, numerous small vugs. Core badly broken 165-166, possibly v. argillaceous.	159.2	162.8	DC74-0049-1
38.2	Silty limestone, yl-brn, pellet-micritic, dolomitic in part, numerous small vugs. Core badly broken 165-166, possibly v. argillaceous.	162.8	166.3	DC74-0049-2

38.3	Silty limestone, yl-brn, pellet-micritic, dolomitic in part, numerous small vugs. Core badly broken 165-166, possibly v. argillaceous.	166.3	168.0	C74-0049-3
39	Silty dolomite, as unit 37.	168.0	168.4	DC74-0050
40.1	Argillaceous limestone, yl-brn and gry-brn, mottled, v. soft and porous in part.	168.4	171.0	DC74-0051-1
40.2	Argillaceous limestone, yl-brn and gry-brn, mottled, v. soft and porous in part.	171.0	172.8	DC74-0051-2
41	Limestone, as unit 40, and chert, lt. gry and dk gry mottled, chert as small nodules and thin beds.	172.8	173.4	DC74-0052
	Loss of 6.6 feet in run 7			
42.1	Limestone, dk yl-brn, micritic, very argillaceous and soft in places, few small chert nodules lower part gray.	180.0	182.3	DC74-0053-1
42.2	Limestone, dk yl-brn, micritic, very argillaceous and soft in places, few small chert nodules lower part gray.	182.3	185.0	DC74-0053-2
42.3	Limestone, dk yl-brn, micritic, very argillaceous and soft in places, few small chert nodules lower part gray 185.0-188.5.	185.0	188.5	DC74-0054
43	Limestone and Claystone, badly broken in core barrel.	188.5	188.8	DC74-0055
44.1	Limestone, dk yl-brn, micritic-skeletal, fn-cs. grained, v. thin bed of chert at 190.6', slightly argillaceous, middle part more uniform 192.-194.0; 194.-196.7.	188.8	192.0	DC74-0056-1
44.2	Limestone, dk yl-brn, micritic-skeletal, fn-cs. grained, v. thin bed of chert at 190.6', slightly argillaceous, middle part more uniform 192.-194.0; 194.-196.7.	192.0	194.0	DC74-0056-2
44.3	Limestone, dk yl-brn, micritic-skeletal, fn-cs. grained, v. thin bed of chert at 190.6', slightly argillaceous, middle part more uniform 192.-194.0; 194.-196.7.	194.0	196.7	DC74-0056-3
45.1	Limestone, dk brn-gry and yl bin, micritic with few thin beds of skeletal, chert, lt. gr and bl gry, mottled (10% of unit).	196.7	199.0	DC74-0057-1
45.2	Limestone, dk brn-gry and yl bin, micritic with few thin beds of skeletal, chert, lt. gr and bl gry, mottled (10% of unit).	199.0	202.0	DC74-0057-2

SAMPLE INDEX

PERMIT		COUNTY ..Owen.....															
FARM Knapp, Robert R. NO. SDH-249		TWP. 9N RGE. 3W															
OPERATOR Indiana Geological Survey		SEC. 6; NW SE NW															
		230'NL, 630'WL															
COMMENCED ..6-17-74..... COMPLETED ..8-6-74 7-23-74		ELEV. 635															
COMPLETION INTERVAL		POOL BY Paulin															
IP D&A FORMATION		ROTARY CABLE															
TD 202 FORMATION St. Louis																	
SAMPLES FILED <table border="1"> <thead> <tr> <th>Box No.</th> <th>Sample Interval</th> </tr> </thead> <tbody> <tr><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td></tr> </tbody> </table>		Box No.	Sample Interval													REMARKS 	
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		Field checked by J. Cazee, 1974															

INDIANA GEOLOGICAL SURVEY
INDUSTRIAL MINERALS SECTION
DRILLING RECORD

Survey Drill Hole 249

Farm: Robert R. Knapp

NW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$

Location: sec. 6, T. 9N., R. 3W.
230' NL, 630' WL

Owen County

Locality: About 3 miles south of Spencer

Driller: Clarence Haskins; Ass't Driller, John Helms

Drilling began: June 17, 1974

Drilling completed: July 23, 1974

Surface elevation: 635 feet (Paulin)

Total depth: 202 feet

Core requested by: Richard Leininger and Donald Carr

Core described: Donald Carr, August 1974

Comments: Rockbit 0-45'; core 45-202

Core examined wet with binocular microscope

Sample numbers refer to samples prepared for chemical analysis

Unit	Description	Depth in feet	
		From	To
1	Illinoian glacial till	0	40.0
	<u>St. Genevieve Limestone (119.2')</u> <u>Levias Member</u>		
2	Limestone, light gray, skeletal, med. - cs. - grained. Core begins	40.0	45.0
3	Limestone, lt. brn. gray with flecks of reddish brown, skeletal, med.- cs.-grained, partly oolitic, some inclined beds. DC74-14	45.0	47.4
4	Limestone, yl-brn, with streaks and flecks of brown, pelletal with pods and thin beds of cs-grn skeletal, silty throughout but very silty near top and bottom of unit. DC74-15-1 47.4-49.7; DC74-15-2 49.7-51.6.	47.4	51.6
5	Limestone, mottled tan and white, scattered flecks of gray, micritic, slightly silty, siliceous in part. DC74-16.	51.6	53.2
6	Limestone, yellowish brown, with streaks and flecks of gray, micritic, silty and argillaceous, horizontal laminations. DC74-17-1 53.2-55.6 DC74-17-2 55.6-59.6 (0.5' core missing in Run #1, 45'-60')	53.2	59.6
7	Limestone, as unit 6, thin beds of chert up to 15 mm thick scattered DC74-18	59.6	64.0
8	Limestone, tan, micritic, slightly silty, interbedded with limestone as unit 6. DC74-19-1 64.0-66.0 DC74-19-2 66.0-68.4	64.0	68.4
9	Limestone, gry-brn, micritic, with scattered nodules and thin siliceous beds, yl and wh, silty in part. DC74-20-1 68.4-71.0 DC74-20-2 71.0-74.0	68.4	74.0
10	Limestone, gry brn, grading to dk. gray brn near base of unit, several yl-grn argillaceous beds. DC74-21-1 74.0-76.8 DC74-21-2 76.8-80.0	74.0	80.0
11	Limestone, dk, gry-brn, with scattered thin argillaceous beds, dk gry, wh chert nodule at 80.5'. DC74-22-1 80.0-82.0 DC74-22-2 82.0-84.6	80.0	84.6

12	Limestone as unit 11, argillaceous beds increases toward base. DC74-23.	84.6	88.0
13	Limestone, brn-gry, micritic, scattered flecks of clear spar, fine v. thin argill. and silty beds, some burrow structure. DC74-24-1 88.0-91.0 DC74-24-2 91.0-93.6	88.0	93.6
14	Limestone, dk. brn. gry, micritic, few carbonaceous laminae near base of unit. DC74-25-1 93.6-94.5 DC74-25-2 94.5-96.5	93.6	96.5

Spar Mountain Member

15	Argillaceous limestone, bl-grn, detrital grades to calcareous claystone at base. DC74-26	96.5	97.5
16	Shale, dk. gry, calcareous, fissile. DC74-27 (98.5-100.0 missing, run 3)	97.5	98.5
17	Limestone, dk gry, micritic, laminated, and shale, gry-yl, calcareous, at base of unit. DC74-28	100.0	100.4
18	Limestone, tan interbedded with lt. yl-brn, micritic grades to detrital at base, contorted bedding, algal structures, clay and silt increases in lower part of unit. DC74-29	100.4	104.5

Fredonia Member

19	Limestone, brn-gry, pellet interbedded with thin beds of micritic. DC74-30	104.5	106.5
20	Limestone, lt gry, oolitic and skeletal fm. grained, some inclined beds. DC74-31-1 106.5-109.5 DC74-31-2 109.5-112.0	106.5	112.0
21	Argillaceous limestone, brn-yl, detrital DC74-32	112.0	113.0
22	Silty dolomite, brn-gry, calcareous in part, numerous small veins filled with sparry calcite. DC74-33	113.0	114.5
23	Limestone, lt. yl gray, detrital, argillaceous. DC74-34	114.5	115.4
24	Dolomite, brn-gry, silty, hard. DC74-35	115.4	116.0
25	Limestone, lt. yl gry, argill and silty, micritic-detrital, porous, scattered fm.-grn. quartz. DC74-36	116.0	120.1
26	Limestone, v. lt. gry., as unit 26., scattered blebs and laminae of sparry calcite. DC74-37-1 120.1-122.6 DC74-37.2 122.6-126.0	120.1	126.0

27	Limestone, as unit 26, more argillaceous, sli. dolomitic DC74-38	126.0	128.3
28	Limestone, brn-gry, skeletal-micritic, micritic in upper part of unit, fn.-med. grained, hard. DC74-39	128.3	130.5
29	Limestone, lt gry, skeletal, med.-grained DC74-40-1 130.5-134.3 DC74-40-2 134.3-137.6	130.5	137.6
30	Limestone, gry, skeletal, med. - v. cs.-grained DC74-41	137.6	140.0
31	Limestone, lt. yl-brn, micritic-skeletal grading to micri- tic near base, argillaceous content increases toward base. DC74-42	140.0	142.7
32	Argillaceous limestone, yl-brn, micritic, v. porous. DC74-43	142.7	144.1
33	Silty dolomite, yl-brn, calcareous in part, porous. DC74-44	144.1	147.3
34	Limestone, yl-gry, micritic, argillaceous, interbedded with argillaceous limestone as unit 33, few small vugs and vuggy zones filled with calcite and trace fluorite; few siliceous blebs in lower 0.5'. DC74-45	147.3	150.4
35	Limestone, yl-brn, micritic (60%), and chert, light gray and gray, mottled (40%) DC74-46	150.4	150.6
36	Limestone, brn gry, micritic-pellet, increasingly argil- laceous in lower part of unit, scattered oolitic and detrital beds. DC74-47-1 150.6-152.7 DC74-47-2 152.7-156.6	150.6	156.6
37	Silty dolomite, yl-brn, porous, several calcite filled vugs DC74-48	156.6	159.2
<u>St. Louis Limestone</u> (42.8' cored)			
38	Silty limestone, yl-brn, pellet-micritic, dolomitic in part, numerous small vugs. Core badly broken 165-166, possibly v. argillaceous. DC74-49-1 159.2-162.8 DC74-49-2 162.8-166.3 DC74-49-3 166.3-168.0	159.2	168.0
39	Silty dolomite, as unit 37 DC74-50	168.0	168.4
40	Argillaceous limestone, yl-brn and gry-brn, mottled, v. soft and porous in part DC74-51-1 168.4-171.0 DC74-51-2 171.0-172.8	168.4	172.8
41	Limestone, as unit 40, and chert, lt. gry and dk gry mottled, chert as small nodules and thin beds. DC74-52	172.8	173.4

(Loss of 6.6 feet in run 7)

42	Limestone, dk yl-brn, micritic, very argillaceous and soft in places, few small chert nodules lower part gray 185.0-188.5	DC74-53-1 180.0-182.3 DC74-53-2 182.3-185.0 DC74-54 185.0-188.5	180.0	188.5
43	Limestone and Claystone, badly broken in core barrel DC74-55		188.5	188.8
44	Limestone, dk yl-brn, micritic-skeletal, fn-cs. grained, v. thin bed of chert at 190.6', slightly argillaceous, middle part more uniform 192.-194.0	DC74-56-1 188.8-192.0 194.-196.7 DC74-56-2 192.0-194.0 DC74-56-3 194.0-196.7	188.8	196.7
45	Limestone, dk brn-gry and yl brn, micritic with few thin beds of skeletal, chert, lt. gr and bl gry, mottled (10% of unit). DC74-57-1 196.7-199.0 DC74-57-2 199.0-202.0		196.7	202.0
Total depth				202.0

Indiana Geological Survey
Chemical Analyses
Robert R. Knapp Farm
NW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 6, T. 9 N., R. 3 W.
Owen County

[illegible]

Indiana Geological Survey
Chemical Analyses- Page 2
Robert R. Knapp Farm
NW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 6, T. 9 N., R. 3 W.
Owen County

Sample	Thickness	Owen County							Calc						
		CaCO ₃	MgCO ₃	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	MnO	CO ₂						
DC74-35	0.6	53.4	39.0	6.28	0.51	0.34	0.058	0.038	43.8						
36	4.1	76.9	15.4	6.50	0.35	0.45	0.029	0.017	41.9						
37	5.9	60.0	33.2	5.46	0.46	0.47	0.035	0.015	43.7						
38	2.3	63.0	19.3	15.1	1.02	0.76	0.11	0.019	37.8						
39	2.2	91.5	3.97	3.59	0.38	0.19	0.037	0.009	42.3						
40	7.1	92.9	3.69	2.74	0.21	0.13	0.019	0.006	42.8						
41	2.4	97.8	0.62	1.30	0.039	0.068	nd	0.003	43.3						
42	2.7	95.3	2.13	2.00	0.15	0.12	0.015	0.006	43.0						
43	1.3	65.3	33.1	0.85	0.18	0.31	0.017	0.035	46.0						
44	3.2	60.0	29.6	8.71	0.67	0.47	0.040	0.025	41.9						
45	3.1	60.7	29.3	8.50	0.61	0.42	0.039	0.021	42.0						
46	0.2	49.8	8.21	38.4	1.91	0.48	0.19	0.019	26.2						
47	6.0	73.8	19.0	5.67	0.69	0.37	0.032	0.015	42.4						
48	2.6	58.8	35.1	4.23	0.82	0.42	0.042	0.022	44.2						
49	8.8	71.6	25.6	1.79	0.37	0.24	0.024	0.015	44.9						
50	0.4	60.2	36.6	2.11	0.42	0.30	0.029	0.008	45.6						
51	4.4	71.7	22.6	4.27	0.61	0.33	0.035	0.009	43.3						
52	0.6	69.1	20.6	9.31	0.37	0.22	0.020	0.008	41.2						
53	5.0	84.5	10.5	3.94	0.41	0.21	0.024	0.006	42.7						
54	3.5	83.8	12.1	3.01	0.41	0.26	0.023	0.003	43.2						
55	0.3	74.0	1.17	21.2	1.86	0.75	0.10	0.001	33.2						

INDIANA GEOLOGICAL SURVEY
ELECTRIC WELL LOG

WELL NO. SDH-249 ELEVATION 635

LOCATION: COUNTY Owen

SECTION 6, TOWNSHIP 9N, RANGE 3W

NW SE NW 230 NL 630 WL

RUN NUMBER	1	2		
DATE	8-22-74	8-22-74		
LOGGED FROM (feet)	58	73		
LOGGED TO (feet)	199	197		
LONG NORMAL (3)				
SHORT NORMAL (3)				
LONG NORMAL (4)				
SHORT NORMAL (4)		X		
LATERAL (A)				
LATERAL (B)				
SELF POTENTIAL	X			
HOLE DIAMETER	2 7/8"			

Logged by: J. Whaley

POTENTIAL

RESISTIVITY

4 electrodes-16 in. spacing

- 20 mv. +

OHM-METERS

